

Economics 102
Spring 2018
Homework #3
Due 3/15/2018

Directions: The homework will be collected in a box **before** the lecture. Please place your name, TA name and section number on top of the homework (legibly). Make sure you write your name as it appears on your ID so that you can receive the correct grade. Please remember the section number for the section **you are registered**, because you will need that number when you submit exams and homework. Late homework will not be accepted so make plans ahead of time. **Please show your work.** Good luck!

Please remember to

- Staple your homework before submitting it.
- Do work that is at a professional level: you are creating your “brand” when you submit this homework!
- Do not submit messy, illegible, sloppy work.
- Show your work to get full credit.

1. Classify the following scenarios based on the component of GDP (C, I, G, X-IM) or not counted (NC) and then how GDP is affected (increase, decrease, or no change)

Scenario	Component of GDP	Effect on GDP
The government hires workers to build a new road		
A Canadian company decides to change from a US supplier to a Canadian supplier		
A bakery purchases a new industrial oven		
Consumers start saving more, worried a recession is coming		
A UW Madison student pays monthly apartment rent		
A retiree receives his social security check		
A clothing manufacturer buys more cotton		
A local company outsources its call center to overseas (Hint: they’re buying a service)		

2. Use the following information to answer this set of questions where you will be asked to use your knowledge of GDP measurement and the expenditure approach, income approach, and value added approaches to measuring GDP. Assume that there are only two firms in this economy: Wisco Dairy Farm that produces milk and Madtown Creamery that produces ice cream using milk it buys from Wisco Dairy Farm.

Wisco Dairy Farm		Madtown Creamery	
Revenues		Revenues	
Sales to Madtown Creamery	\$15,000	Sales of ice cream to customers	\$55,000
Sales to Canadian Creamery	\$10,000		
Sale of milk to customers	\$5,000	Expenses	
Expenses		Input: Wisco dairy	\$15,000
Wages	\$10,000	Wages	\$14,000
Profits	\$1,000	Profits	\$5,000
Rent	\$15,000	Rent	\$15,000
Interest Payments	\$4,000	Interest Payments	\$6,000

- a. Calculate GDP using the final goods approach
- b. Calculate GDP using the value-added approach. Show your steps.
- c. Calculate GDP using the factor payment approach. Show your steps clearly.
3. Consider the economy of Sweetums, which produces three goods: fudge, brownies, and cake. Round your answers to two places past the decimal point.

	2016		2017		2018	
Good	Price per unit	Units Sold	Price per unit	Units Sold	Price per unit	Units sold
Fudge	\$2	10,000	\$2	11,000	\$3	10,500
Brownies	\$4	2,000	\$5	2,000	\$5	2,500
Cake	\$10	500	\$11	400	\$14	500

- a. Calculate nominal GDP for the years 2016, 2017, 2018.

- b. Calculate Real GDP for all three years, using 2016 as the base year.
- c. Calculate Real GDP for all three years, using 2017 as the base year.
- d. Using your answer from part (b), calculate Real GDP growth from 2016 to 2018 with 2016 as base year. Then, using your answer from part (c), calculate Real GDP growth from 2016 to 2018 with 2017 as the base year. Round your answer to two places past the decimal point. Do you get the same number? Why or why not?
- e. Calculate the GDP deflator using 2016 as a base year. Then use this to calculate how prices changed from 2016 to 2018. Measure the GDP deflator on a 100 point scale and round all calculations to two places past the decimal.
- f. Calculate the GDP deflator using 2017 as a base year. Then use this to calculate how prices changed from 2016 to 2018. Compare this to your answer from (e).
- g. Calculate the CPI for all three years using 2016 as the basket and the base year. Calculate the change in prices from 2016 to 2018 using the CPI. Show your work. Measure the CPI on a 100 point scale and round your answers to two places past the decimal.
- h. Calculate the CPI for all three years using 2016 quantities as the basket but 2017 as the base year. Calculate the change in prices from 2016 to 2018 using this new CPI. Show your work. Measure the CPI on a 100 point scale and round your answers to two places past the decimal.

- i. Compare your answers about change in prices above (e, f, g, h).
4. For each of the following scenarios, determine whether each person is employed (E), unemployed (U), or not in the labor force (NLF).

Scenario	E, U, NLF
A UW student working part-time	
A 45-year old single dad who is only working part-time but would prefer a full-time job	
A 15 year old actively searching for a job	
A full-time Military officer	
A new college graduate who has looked for work within the last two weeks	
A family relative who is not working and has not applied to any jobs in the past four weeks	
A 30-year old man who lost his job a week ago and has a job interview tomorrow	
A 25-year old woman who lost her job 2 months ago and moved back in with her parents, and hasn't searched for a job since she lost her job	

5. Unemployment calculations – consider again the economy of Sweetums. We have historical information on their population and labor force:

	2000	2005	2010
Population	25,000,000	26,500,000	29,000,000
Adult population	18,000,000	20,000,000	23,000,000
Adult population able to work	17,000,000	19,500,000	22,750,000
Adult population able and wanting to work	15,000,000	18,500,000	22,000,000
Number employed	13,000,000	17,000,000	19,000,000
Number unemployed	1,000,000	1,000,000	2,000,000

- a. Define the labor force in general and then find the labor force for each year given the above information.

- b. Define discouraged workers and find the number of discouraged workers for each year given the above information.

- c. Calculate the labor-force participation rate for each year. Round your answer to two places past the decimal.

- d. Calculate the unemployment rate for each year. Round your answer to two places past the decimal.